

Complete Summary

GUIDELINE TITLE

Water quality for haemodialysis.

BIBLIOGRAPHIC SOURCE(S)

Water quality for haemodialysis. Nephrology 2005 Oct;10(S4):S75-7.

Water quality for haemodialysis. Westmead NSW (Australia): CARI - Caring for Australians with Renal Impairment; 2005 Jul. 7 p. [19 references]

GUIDELINE STATUS

This is the current release of the guideline.

COMPLETE SUMMARY CONTENT

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SCOPE

DISEASE/CONDITION(S)

End-stage kidney disease (ESKD)

GUIDELINE CATEGORY

Evaluation
Management
Treatment

CLINICAL SPECIALTY

Family Practice
Nephrology
Nursing

INTENDED USERS

Allied Health Personnel
Clinical Laboratory Personnel
Nurses
Physicians

GUIDELINE OBJECTIVE(S)

To review the available evidence for the benefit of regular testing and audit of water treatment systems and quality of water produced for hemodialysis

TARGET POPULATION

Patients with end-stage kidney disease (ESKD) on prolonged hemodialysis

INTERVENTIONS AND PRACTICES CONSIDERED

Evaluation

1. Chemical testing for contamination of dialysate
2. Microbial testing for contamination of dialysate

Management/Treatment

1. Optimal dialysate production for hemodialysis
2. Use of ultrapure water for hemodialysis

MAJOR OUTCOMES CONSIDERED

- Chemical contamination of dialysate
- Microbial contamination of dialysate
- Mortality

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Databases searched: Medical Subject Headings (MeSH) terms and text words for dialysis were combined with MeSH terms and text words for water purification, chlorine, fluorides, water, water microbiology, water supply and water pollution, and then combined with the Cochrane highly sensitive search strategy for randomised controlled trials. The search was carried out in Medline (1966 – July Week 2 2004). The Cochrane Renal Group Trials Register was also searched for trials not indexed in Medline.

Date of searches: 27 July 2004.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Levels of Evidence

Level I: Evidence obtained from a systematic review of all relevant randomized controlled trials (RCTs)

Level II: Evidence obtained from at least one properly designed RCT

Level III: Evidence obtained from well-designed pseudo-randomized controlled trials (alternate allocation or some other method); comparative studies with concurrent controls and allocation not randomized, cohort studies, case-control studies, interrupted time series with a control group; comparative studies with historical control, two or more single arm studies, interrupted time series without a parallel control group

Level IV: Evidence obtained from case series, either post-test or pretest/post-test

METHODS USED TO ANALYZE THE EVIDENCE

Review of Published Meta-Analyses
Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

Not stated

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Comparison with Guidelines from Other Groups
Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Recommendations of Others. Recommendations regarding water quality for hemodialysis from the following groups were discussed: Kidney Disease Outcomes Quality Initiative, British Renal Association, Canadian Society of Nephrology, European Best Practice Guidelines, and International Guidelines.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Definitions for the levels of evidence (I–IV) can be found at the end of the "Major Recommendations" field.

Guidelines

No recommendations possible based on Level I or II evidence

Suggestions for Clinical Care

(Suggestions are based on Level III and IV sources)

- Ensure regular testing and audit of water treatment system and quality of water produced for dialysis. Note some of the limitations to accurate chemical and microbial testing. Be familiar with local practice in municipal water treatment and testing procedures.
- Ultrapure water may reduce long-term risk of accelerated vascular damage, improve response to erythropoietic agents and reduce catabolic nutritional state.
- Infusion fluid for haemodiafiltration or haemofiltration must be produced with strict observance of the manufacturer's validated process. Final filtration must ensure 7 log reduction in bacterial count of ultrapure fluid.
- European guidelines should be the basis for optimal dialysate production.

Definitions:

Levels of Evidence

Level I: Evidence obtained from a systematic review of all relevant randomized controlled trials (RCTs)

Level II: Evidence obtained from at least one properly designed RCT

Level III: Evidence obtained from well-designed pseudo-randomized controlled trials (alternate allocation or some other method); comparative studies with concurrent controls and allocation not randomized, cohort studies, case-control studies, interrupted time series with a control group; comparative studies with historical control, two or more single arm studies, interrupted time series without a parallel control group

Level IV: Evidence obtained from case series, either post-test or pretest/post-test

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is identified and graded for each recommendation (see "Major Recommendations").

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

- Optimal dialysate production
- Appropriate testing and audit of water used for hemodialysis in patients with end-stage kidney disease
- Reduction of long-term risk of accelerated vascular damage, improved response to erythropoietic agents, and reduced catabolic nutritional state

POTENTIAL HARMS

Not stated

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

Implementation and Audit

1. Establish affordable endotoxin testing capability in each state.
2. Standardise culture techniques. Encourage regular unit/state review of chemical and microbial test results.

3. Encourage provision of appropriate instruction to both medical and nursing staff regarding water treatment – as per both the Association for the Advancement of Medical Instrumentation (AAMI) and European Best Practice Guidelines (EBPG) guidelines.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Living with Illness

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

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ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2005 Oct

GUIDELINE DEVELOPER(S)

Caring for Australasians with Renal Impairment - Disease Specific Society

SOURCE(S) OF FUNDING

Industry-sponsored funding administered through Kidney Health Australia

GUIDELINE COMMITTEE

Not stated

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

David Harris, Convenor (Westmead, New South Wales); Merlin Thomas (Pahran, Victoria); David Johnson (Woolloongabba, Queensland); Kathy Nicholls (Parkville, Victoria); Adrian Gillin (Camperdown, New South Wales)

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

All guideline writers are required to fill out a declaration of conflict of interest.

GUIDELINE STATUS

This is the current release of the guideline.

GUIDELINE AVAILABILITY

Electronic copies: Available in Portable Document Format (PDF) from the [Caring for Australasians with Renal Impairment \(CARI\) Web site](#).

Print copies: Available from Caring for Australasians with Renal Impairment, Locked Bag 4001, Centre for Kidney Research, Westmead NSW, Australia 2145

AVAILABILITY OF COMPANION DOCUMENTS

The following is available:

- The CARI guidelines. A guide for writers. Caring for Australasians with Renal Impairment. 2008 Jul. 6 p.

Electronic copies: Available from the [Caring for Australasians with Renal Impairment \(CARI\) Web site](#).

PATIENT RESOURCES

None available

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